

Enhancing Production Potential of Lentil for Nutritional Security: A Success Story from Changthang Region of Ladakh

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Situation analysis

Lentil is one of the important pulse crop consumed by almost every household not only of Changthang region of Leh district but also whole of Ladakh because of having more nutritive value, ease in cooking and less availability of fresh green vegetables during the winter session. Due to the unavailability of suitable varieties and lack of knowledge about scientific cultivation, most of the farmers are using traditional cultivation practices. Crop season of Ladakh particularly of Changthang region is very short although it allows the lentil cultivation as sole pulse crop in the region. However, low productivity in the region is due to the erratic climatic conditions as well as the use of local low yielding variety and lack of knowledge about scientific lentil cultivation. Keeping all these facts in mind, Krishi Vigyan Kendra, Nyoma submitted a proposal to ICAR-ATARI (Zone-I), Ludhiana for conduct the cluster frontline demonstrations (CFLD) on pulses with lentil crop in Changthang region of Leh district at 28 farmers' field during the year 2019.

Plan Implement and support

In view of the marginality of farmers less area under lentil crop, low productivity, short crop season and climatic vagaries, scientific team of KVK Nyoma intervened with the suitable variety of crop (KGML) through the selection from local material. The technological interventions *viz.* improved seed of KGML and technical know-how were provided to the farmers in four different selected villages with an area of 0.764 ha covering 28 farmers (Table 1). One awareness cum training programme and time to time monitoring of each and every field was done to support the farmers. On the crop maturity, one field day programme was organized by the KVK for better understanding and spread of technology to other farmers of the same villages and the farmers of nearby villages.

Table 1: Village wise area coverage of technology during summer 2019

Sr. No.	Name of village	No. of beneficiary	Area covered (ha)
1	Liktse	18	0.500
2	Kungyam	7	0.151
3	Teri	2	0.10
4	Nyoma	1	0.013
Total	04	28	0.764

Following technological Interventions were applied in the demonstration plots

Sr. No.	Description	Technology
1.	Seed rate	80 Kg/ha
2.	Variety	Local Selection (KGML)
3.	Sowing Time	Month of May
4.	Method of sowing	Line sowing (25X10cm)
5.	Fertilizer management	125-150 Qtls/ha FYM applied
6.	Weed management	Manually hand weeding was done after 35 DAS
7.	Irrigation management	First Irrigation was done after 20 DAS and thereafter every fortnightly as per crop requirement
8.	Harvesting & Threshing	First fortnight of September

Out put

Through the motivational support, technological interventions, training and method demonstrations, following comparative results have been recorded from the farmer's field.

Table 2: Comparative analysis of lentil in demonstration plots v/s farmer's plots

Demonstration plots		Farmer's plots		Yield enhancement (%) in demonstration plots
Variety	Average yield (kg/ha)	Variety	Average yield (kg/ha)	
Selection (KGML)	683	Local	594	13.03

Table 2 clearly indicates that farmer's plots yield was recorded 594 kg/ha. Whereas the average grain yield of beneficiary farmer's of demonstration plots was recorded as 683 kg/ha and marking 13.03 per cent increase in yield as compare to farmer's plots.

Out come

In addition to production potential, economic analysis of the technology provides a better foundation for adoption of technology among farmers. Table 3 revealed that Gross return of demonstration plots and farmer's plots was Rs. 58673 and Rs.50940, respectively. Likewise Net return of demonstration plots was Rs. 22223/ha, whereas farmer's practice was Rs. 16090/ha. While benefit cost ratio was 1.61 of demonstration plots and 1.46 in farmer's plots. For one additional rupee spent on intervention, there is benefit of Rs 3.83 to the farmer.

Table 3: Economic analysis of lentil in demonstration plots v/s farmer's plots

Demonstration plots				Farmer's plots			
Cost of cultivation (Rs./ha)	Gross return (Rs /ha)	Net Return (Rs/ ha)	B: C Ratio	Cost of cultivation (Rs./ha)	Gross return (Rs./ha)	Net Return (RS. ha)	B: C Ratio
36450	58673	22223	1.61	34850	50940	16090	1.46

Impact of technology

Majority of farmers adopted the demonstration technology in Likkse and Kungyam villages, whereas fewer farmers were willing to adopt the technology in Nyoma village due to climatic fluctuation and comparatively short season, the farmers having need of short duration variety. The overall results clearly revealed that the lentil production is more beneficial in terms of yield enhancement, net return and B:C ratio to the adoption of scientific technology by the farmers. These Initiatives worked as catalyst inspiring the other farmers in the nearby villages towards the scientific technology of lentil production for ensuring nutritional security of the region.

Suggestions for further adoption

- I. Further need of high yielding varieties of pulses particularly for promotion of lentil production.
- II. Need of short duration varieties of lentil crop which are tolerant to cold and should be available locally to the farmers.
- III. Buyback scheme may be beneficial for further adoption of lentil crop.



Scientist visit to the farmers field



Field day on lentil

